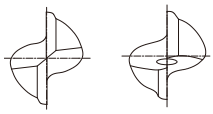
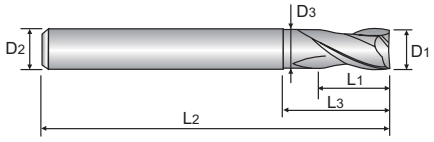
CARBIDE, 2 FLUTE STUB LENGTH

▶ Designed for machining high-hardened materials, dry cutting, and high-speed cutting.
▶ Consistently delivers an exceptional workpiece finish and boasts high wear resistance.





p. 80~81

Size	Mill Dia.Tolerance (mm)	Shank Dia.Tolerance
up to Ø6	0 ~ - 0.012	h5
over Ø6	0 ~ - 0.015	

GFJ72 SERIES

Unit : mm

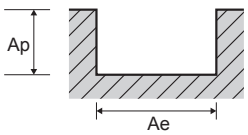
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
GFJ72004	0.4	4	0.8	-	40	-
GFJ72005	0.5	4	1	-	40	-
GFJ72006	0.6	4	1.2	-	40	-
GFJ72007	0.7	4	1.4	-	40	-
GFJ72008	0.8	4	1.6	-	40	-
GFJ72009	0.9	4	2	-	40	-
GFJ72010	1.0	6	1.5	3	50	0.95
GFJ72015	1.5	6	1.7	4	50	1.45
GFJ72020	2.0	6	2	5	50	1.95
GFJ72025	2.5	6	2.5	6	55	2.4
GFJ72030	3.0	6	3	8	55	2.85
GFJ72035	3.5	6	3.5	9	55	3.35
GFJ72040	4.0	6	4	10	55	3.85
GFJ72050	5.0	6	5	13	55	4.85
GFJ72060	6.0	6	6	15	55	5.85
GFJ72080	8.0	8	8	20	65	7.7
GFJ72100	10.0	10	10	25	75	9.7
GFJ72120	12.0	12	12	28	85	11.7
GFJ72160	16.0	16	16	32	90	15.7
GFJ72200	20.0	20	20	40	105	19.7

RECOMMENDED CUTTING CONDITIONS

GFJ72 SERIES — 2 FLUTE - SLOTTING

Vc = (m/min.)
fz = (mm/tooth)
RPM = (rev./min.)
FEED = (mm/min.)

ISO	VDI 3323	Material Description	Ae(mm)	Ap(mm)	Parameter 參数	Diameter (Ø) 0.5	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
P	5	Non-alloy steel	1.0D	0.05D	Vc	31	37	50	59	82	81	82	97	97	98	96	98
					fz	0.003	0.004	0.006	0.007	0.012	0.018	0.025	0.030	0.033	0.044	0.052	0.061
					RPM	19,700	19,700	19,700	18,900	13,100	8,600	6,550	6,200	5,150	3,900	3,050	2,600
					FEED	135	175	220	275	315	315	325	370	345	345	315	315
	8-9	Low alloy steel	1.0D	0.05D	Vc	31	37	50	59	82	81	82	97	97	98	96	98
					fz	0.003	0.004	0.006	0.007	0.012	0.018	0.025	0.030	0.033	0.044	0.052	0.061
					RPM	19700	19700	19700	18900	13100	8600	6550	6200	5150	3900	3050	2600
					FEED	135	175	220	275	315	315	325	370	345	345	315	315
	11.1	High alloyed steel, and tool steel	1.0D	0.05D	Vc	31	37	50	59	82	81	82	97	97	98	96	98
					fz	0.003	0.004	0.006	0.007	0.012	0.018	0.025	0.030	0.033	0.044	0.052	0.061
					RPM	19,700	19,700	19,700	18,900	13,100	8,600	6,550	6,200	5,150	3,900	3,050	2,600
					FEED	135	175	220	275	315	315	325	370	345	345	315	315
	11.2		1.0D	0.05D	Vc	28	33	44	47	64	64	65	77	76	77	77	77
					fz	0.003	0.004	0.005	0.007	0.012	0.018	0.025	0.030	0.035	0.043	0.051	0.061
					RPM	17,700	17,700	17,700	14,950	10,250	6,800	5,200	4,900	4,050	3,050	2,450	2,050
					FEED	105	135	160	210	250	250	265	295	285	265	250	250
H	38.1	Hardened steel	1.0D	0.05D	Vc	28	33	44	47	64	64	65	77	76	77	77	77
					fz	0.003	0.004	0.005	0.007	0.012	0.018	0.025	0.030	0.035	0.043	0.051	0.061
					RPM	17,700	17,700	17,700	14,950	10,250	6,800	5,200	4,900	4,050	3,050	2,450	2,050
					FEED	105	135	160	210	250	250	265	295	285	265	250	250
	38.2		1.0D	0.05D	Vc	25	30	30	32	43	43	43	51	51	52	50	53
					fz	0.003	0.003	0.004	0.007	0.012	0.018	0.025	0.029	0.033	0.041	0.050	0.057
					RPM	15,750	15,750	11,800	10,050	6,900	4,550	3,450	3,250	2,700	2,050	1,600	1,400
					FEED	85	105	105	135	160	160	170	190	180	170	160	160
	39.1		1.0D	0.05D	Vc	20	22	25	25	36	35	36	39	40	40	39	40
					fz	0.002	0.003	0.003	0.005	0.008	0.013	0.018	0.021	0.025	0.030	0.036	0.043
					RPM	13,000	11,800	9,850	8,050	5,700	3,750	2,850	2,500	2,100	1,600	1,250	1,050
					FEED	55	60	65	85	95	95	100	105	105	95	90	90
	39.2		1.0D	0.05D	Vc	15	19	19	20	27	28	28	31	31	31	31	32
					fz	0.002	0.002	0.003	0.004	0.007	0.010	0.015	0.016	0.020	0.026	0.028	0.032
					RPM	9,850	9,850	7,500	6,300	4,350	2,950	2,200	2,000	1,650	1,250	1,000	850
					FEED	30	40	40	55	60	60	65	65	65	65	55	55
	40	Chilled Cast Iron	1.0D	0.05D	Vc	28	33	44	47	64	64	65	77	76	77	77	77
					fz	0.003	0.004	0.005	0.007	0.012	0.018	0.025	0.030	0.035	0.043	0.051	0.061
					RPM	17,700	17,700	17,700	14,950	10,250	6,800	5,200	4,900	4,050	3,050	2,450	2,050
					FEED	105	135	160	210	250	250	265	295	285	265	250	250
	41	Hardened Cast Iron	1.0D	0.05D	Vc	25	30	30	32	43	43	43	51	51	52	50	53
					fz	0.003	0.003	0.004	0.007	0.012	0.018	0.025	0.029	0.033	0.041	0.050	0.057
					RPM	15,750	15,750	11,800	10,050	6,900	4,550	3,450	3,250	2,700	2,050	1,600	1,400
					FEED	85	105	105	135	160	160	170	190	180	170	160	160



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SOLID CARBIDE, END MILLS for Hardened Material

Specially optimized geometry and coating
for machining Hardened steels up to 65 HRc

◎ : Excellent ○ : Good

SERIES	GFJ69	GFJ68
FLUTE	2	2
HELIX ANGLE	30°	30°
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE
SIZE MIN	R0.2	R0.1
SIZE MAX	R2.0	R6.0
PAGE	66	69
	LONG LENGTH	-
	Z-VG Coating	Z-VG Coating


ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc		
P	1	Non-alloy steel	About 0.15% C	Annealed	125			
	2		About 0.45% C	Annealed	190	13		
	3		About 0.45% C	Quenched & Tempered	250	25		
	4		About 0.75% C	Annealed	270	28		
	5		About 0.75% C	Quenched & Tempered	300	32	○	○
	6	Low alloy steel		Annealed	180	10		
	7			Quenched & Tempered	275	29		
	8			Quenched & Tempered	300	32	○	○
	9			Quenched & Tempered	350	38	○	○
	10	High alloyed steel, and tool steel		Annealed	200	15		
	11			Quenched & Tempered	325	35	◎	◎
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15		
	13		Martensitic	Quenched & Tempered	240	23		
	14		Austenitic		180	10		
K	15	Grey cast iron	Pearlitic / ferritic		180	10		
	16		Pearlitic (Martensitic)		260	26		
	17	Nodular cast iron	Ferritic		160	3		
	18		Pearlitic		250	25		
	19	Malleable cast iron	Ferritic		130			
	20		Pearlitic		230	21		
N	21	Aluminum-wrought alloy	Not Curable		60			
	22		Curable	Hardened	100			
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75			
	24		≤ 12% Si, Curable	Hardened	90			
	25		> 12% Si, Not Curable		130			
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110			
	27		CuZn, CuSnZn (Brass)		90			
	28		CuSn, lead-free copper and electrolytic copper		100			
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic					
	30		Rubber, Wood, etc.					
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15		
	32			Cured	280	30		
	33		Ni or Co Based	Annealed	250	25		
	34			Cured	350	38		
	35			Cast	320	34		
	36	Titanium Alloys	Pure Titanium		400 Rm			
	37		Alpha + Beta Alloys	Hardened	1050 Rm			
H	38	Hardened steel		Hardened	550	55	◎	◎
	39			Hardened	630	60	◎	◎
	40	Chilled Cast Iron		Cast	400	42	◎	◎
	41	Hardened Cast Iron		Hardened	550	55	◎	◎

Recommended cutting conditions : p.75~82

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GFJ70	GFJ71	GFJ74	GFJ72	GFJ73
4	4	6	2	4
30°	30°	45°	30°	30°
CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE
D6.0	D3.0	D6.0	D0.4	D1.0
D12.0	D12.0	D20.0	D20.0	D20.0
70	**71**	**72**	**73**	**74**
-	SHORT LENGTH	-	STUB LENGTH	STUB LENGTH
Z-VG Coating	Z-VG Coating	Z-VG Coating	Z-VG Coating	Z-VG Coating
				
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◎	◎	◎	◎	◎ 41

RECOMMENDED CUTTING CONDITIONS

GFJ72 SERIES — 2 FLUTE - SIDE CUTTING

Vc = (m/min.)
fz = (mm/tooth)
RPM = (rev./min.)
FEED = (mm/min.)

ISO	VDI 3323	Material Description	Ae(mm)	Ap(mm)	Parameter	Diameter (Ø) 0.5	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
P	5	Non-alloy steel	0.03D	1.0D	Vc	31	37	50	59	82	81	82	97	97	98	96	98
					fz	0.002	0.003	0.004	0.010	0.017	0.026	0.035	0.043	0.049	0.063	0.072	0.085
					RPM	19,700	19,700	19,700	18,900	13,100	8,600	6,550	6,200	5,150	3,900	3,050	2,600
					FEED	95	125	160	390	440	440	460	535	500	490	440	440
	8-9	Low alloy steel	0.03D	1.0D	Vc	31	37	50	59	82	81	82	97	97	98	96	98
					fz	0.002	0.003	0.004	0.010	0.017	0.026	0.035	0.043	0.049	0.063	0.072	0.085
					RPM	19,700	19,700	19,700	18,900	13,100	8,600	6,550	6,200	5,150	3,900	3,050	2,600
					FEED	95	125	160	390	440	440	460	535	500	490	440	440
	11.1	High alloyed steel, and tool steel	0.03D	1.0D	Vc	31	37	50	59	82	81	82	97	97	98	96	98
					fz	0.002	0.003	0.004	0.010	0.017	0.026	0.035	0.043	0.049	0.063	0.072	0.085
					RPM	19,700	19,700	19,700	18,900	13,100	8,600	6,550	6,200	5,150	3,900	3,050	2,600
					FEED	95	125	160	390	440	440	460	535	500	490	440	440
	11.2		0.02D	1.0D	Vc	28	33	44	47	64	64	65	77	76	77	77	77
					fz	0.002	0.003	0.003	0.010	0.017	0.026	0.036	0.043	0.051	0.062	0.072	0.087
					RPM	17,700	17,700	17,700	14,950	10,250	6,800	5,200	4,900	4,050	3,050	2,450	2,050
					FEED	75	95	115	305	355	355	370	425	410	380	355	355
H	38.1	Hardened steel	0.02D	1.0D	Vc	28	33	44	47	64	64	65	77	76	77	77	77
					fz	0.002	0.003	0.003	0.010	0.017	0.026	0.036	0.043	0.051	0.062	0.072	0.087
					RPM	17,700	17,700	17,700	14,950	10,250	6,800	5,200	4,900	4,050	3,050	2,450	2,050
					FEED	75	95	115	305	355	355	370	425	410	380	355	355
	38.2		0.02D	1.0D	Vc	25	30	30	32	43	43	43	51	51	52	50	53
					fz	0.002	0.002	0.003	0.009	0.016	0.024	0.033	0.041	0.046	0.056	0.069	0.079
					RPM	15,750	15,750	11,800	10,050	6,900	4,550	3,450	3,250	2,700	2,050	1,600	1,400
					FEED	60	75	75	190	220	220	230	265	250	230	220	220
	39.1		0.02D	1.0D	Vc	20	22	25	25	36	35	36	39	40	40	39	40
					fz	0.001	0.002	0.002	0.007	0.012	0.018	0.025	0.029	0.035	0.042	0.050	0.060
					RPM	13,000	11,800	9,850	8,050	5,700	3,750	2,850	2,500	2,100	1,600	1,250	1,050
					FEED	35	40	40	115	135	135	140	145	145	135	125	125
	39.2		0.02D	1.0D	Vc	15	19	19	20	27	28	28	31	31	31	31	32
					fz	0.001	0.002	0.002	0.006	0.010	0.014	0.020	0.024	0.029	0.034	0.043	0.050
					RPM	9,850	9,850	7,500	6,300	4,350	2,950	2,200	2,000	1,650	1,250	1,000	850
					FEED	20	30	30	75	85	85	90	95	95	85	85	85
	40	Chilled Cast Iron	0.02D	1.0D	Vc	28	33	44	47	64	64	65	77	76	77	77	77
					fz	0.002	0.003	0.003	0.010	0.017	0.026	0.036	0.043	0.051	0.062	0.072	0.087
					RPM	17,700	17,700	17,700	14,950	10,250	6,800	5,200	4,900	4,050	3,050	2,450	2,050
					FEED	75	95	115	305	355	355	370	425	410	380	355	355
	41	Hardened Cast Iron	0.02D	1.0D	Vc	25	30	30	32	43	43	43	51	51	52	50	53
					fz	0.002	0.002	0.003	0.009	0.016	0.024	0.033	0.041	0.046	0.056	0.069	0.079
					RPM	15,750	15,750	11,800	10,050	6,900	4,550	3,450	3,250	2,700	2,050	1,600	1,400
					FEED	60	75	75	190	220	220	230	265	250	230	220	220